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Review Article

Ischemic heart disease in women

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Nowadays, Coronary Diseases (CDs) represent the main mortality cause in men and women, but there are gender differences regarding their presentation, progression and the way the disease is tackled. This study mainly focuses on reviewing literature about the CD and its gender approach. The authors carried out a search of texts that use qualitative methodology, published between 2003 and 2009 in the following databases: PUBMED, IME, CUIDEN and CINAHL. Factors that hinder the early diagnosis of Ischemic Heart Disease in women are identified as the main findings, and the possible consequences are pointed out. In the fifty-six texts that were selected initially, we can see the difficulty women face to recognize early symptoms of the CD and their low risk perception of this disease. Greater awareness on Ischemic Heart Disease is needed, so that the high morbidity and mortality rates can be reduced.

Descriptors: Coronary Disease; Gender and Health; Myocardical Infarction; Qualitative Research.

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A cardiopatia isquêmica na mulher

As doenças coronárias (DC) são o principal motivo de mortalidade no sexo feminino e masculino. Existem diferenças de gênero na apresentação, na evolução e na maneira como a doença é abordada. Este trabalho teve como objetivo principal revisar a literatura sobre a DC e o seu enfoque de gênero. Os autores pesquisaram diferentes textos caracterizados por uma abordagem qualitativa, publicados entre 2003 e 2009, nas bases de dados PubMed, IME, CUIDEN e CINAHL. Como principais resultados são identificados os fatores que dificultam o diagnóstico precoce da doença isquêmica nas mulheres, e as possíveis consequências desse diagnóstico tardio são apontadas. Nos 56 textos selecionados, inicialmente mostra-se a dificuldade da mulher relacionada ao reconhecimento dos primeiros sintomas da doença coronária, e a baixa percepção do risco dessa doença. É necessária maior sensibilização sobre a cardiopatia isquêmica (CI), para se reduzir o elevado índice de morbidade e mortalidade.

Descritores: Doença das Coronárias; Gênero e Saúde; Infarto do Miocárdio; Pesquisa Qualitativa.

La cardiopatía isquémica en la mujer

Las Enfermedades Coronarias (EC) suponen la principal causa de mortalidad en el sexo femenino y masculino, pero existen diferencias de género en aspectos como la presentación, evolución o el abordaje de la enfermedad. Este trabajo se centra principalmente en revisar la literatura sobre la EC y el enfoque de género. Los autores han realizado una búsqueda de artículos que utilizan metodología cualitativa publicados entre 2003 y 2009 en las bases de datos PUBMED, IME, CUIDEN y CINAHL. Como hallazgos principales se identifican los factores que dificultan el diagnóstico precoz de la cardiopatía isquémica en la mujer, y se apuntan las posibles consecuencias que puede comportar. En los 56 textos seleccionados, inicialmente se evidencia la dificultad de la mujer para reconocer los síntomas iniciales de EC, así como la baja percepción de riesgo sobre dicha enfermedad. Es necesaria una mayor concienciación sobre la CI con la finalidad de reducir las altas cifras de morbimortalidad.

Descriptores: Enfermedad Coronaria; Género y Salud; Infarto de Miocardio, Investigación Cualitativa.

Introduction

Nowadays, Cardiovascular Diseases (CVD) represent the main cause of death all of the world among women and men, preceding illnesses like cancer or traffic accidents[1-2]. According to data by the World Health Organization, it is estimated that, in 2005, 17.5 million people died of CVD, which represents about 30% of deaths registered all over the world[3]. In Europe, CVD are the main cause of death among men and women and responsible for almost half of all deaths[3]. Among CVD, the main group is Ischemic Heart Disease (mainly Angina Pectoris and Myocardial Infarction). At those moments, it is assumed that an increasing number of men and women live with a CVD, and it is estimated that, each year, the number of cases of infarction and angina that demand hospitalization will increase by 1.5%[2], including the socioeconomic impact this entails.

Countless studies[4-6] have revealed gender differences in Ischemic Heart Disease (IHD), a fact that is of vital importance if we intend to approach a gender focus of this disease. Differences exist not only in the clinical manifestations of coronary disease, but also in

the therapeutic approach or in the way of responding to a cardiac event. Therefore, we can only value the true dimension of the problem we are facing when we are able to discover how women experience their disease and why they react as they do. In this sense, it is essential to ask what previous information or knowledge level women have about their disease when they get ill, so as to better understand how they respond to the disease and why.

Another issue of interest is related to the reasons conditioning this observed behavior in women; why they tend to postpone their request for specialized care, how they interpret the first signs of IHD and why they react as they do. All of this will lead to a justification of qualitative foci as a method to approach the study phenomenon. The answer women adopt when they experience the first IHD symptoms is conditioned by multiple factors that need to be explored, broken down and later integrated with a view to an easier understanding of certain attitudes and behaviors.

All of these proposals should contain greater awareness raising about CVD in general and IHD in particular; a course that needs to include gender foci in future studies and research, and in which women stop being and feeling discriminated against because of their presence as witnesses in current research. The male model has traditionally been taken as a reference to study diseases and health-related processes, although this male-centered focus has aroused confusion and has hampered the supposed impartiality and objectivity of medical sciences.

The main goal of this paper is to develop a qualitative literature review on coronary disease in women. As a secondary goal, the authors aim to understand how women experience and feel coronary disease, an essential aspect to plan adequate preventive policies and try to reduce the impact of these diseases.

Method

A bibliographic review was developed with a focus on scientific production related to ischemic heart disease in women between 2003 and 2009. In total, 56 papers were selected. The following databases were consulted: MEDLINE, CUIDEN, CINAHL and IME. This search was carried out between March and May 2010.

The search strategy followed departs from the more general aspects (like the epidemiological aspects of CVD for example) and progressively moves the focus of interest towards the main study object, which is the gender focus on the disease[6-7].

Practically 50% of the revised literature is very recent, as the papers were published in the last three years. The journals that contribute with a larger number of articles are, first, journals specialized in the study theme, such as *Enfermería en Cardiología, European Journal of Cardiovascular Nursing, la Revista Española de Cardiología, The Journal of Cardiovascular Nursing, la Revista de la Federación Argentina de Cardiología, Progress in Cardiovascular Nursing, Critical Pathways in Cardiology* or *Journal of the American Heart Association*. Other Nursing journals in which some of the texts analyzed were published are: *International Journal of Nursing Studies, British Journal of Nursing* or *Medsurg Nursing*, among others. Among journals that are not Nursing and Cardiology journals in the strict sense, the *American Journal of Critical care, Australian Critical Care* or *Women's Health* stand out as examples. In total, about 30 scientific journals were represented in this literature review.

In compliance with the inclusion criteria, those papers were selected that are directly related with cardiovascular illness in women, basically qualitative texts that intend to approach women's experiences of the disease[6]. In fact, in 25 papers included (almost 45% of the total sample), the authors survey how women perceive their disease and which are the reasons for this behavior. In principle, 5562 texts on coronary disease were identified, of which 56 were selected in total because they complied with the inclusion criteria set for this research. This selection was based on a thematic analysis, using the following key words or descriptors[7]: first, general terms were introduced, such as: "*enfermedad cardiovascular*", "*cardiopatía isquémica*", "*infarto de miocardio*", "*angina de pecho*", "*enfermería*" or "*factores de riesgo*". Next, the analysis was further elaborated to direct the search towards the concrete goals. In this case, the following descriptors were used: "*percepción del riesgo*", "*mujer*", "*género*", "*conocimientos previos*" or "*síntomas de cardiopatía isquémica*". At a higher complexity level, Boolean operators were used in order to more specifically narrow down to the intended goals and avoid unnecessary interference. That is, descriptors were crossed in the search, like in the following example: "*género*" or "*infarto de miocardio*" or "*fenomenología*" or "*cualitativa*".

After elaborating the search, those papers were selected which, in our opinion, were most closely related with the study theme, discarding more general texts and papers that did not contribute further (information saturation)[6-7].

Inclusion criteria

- Papers published in English or Spanish in scientific health journals between 2003 and 2009;
- Qualitative texts that explore patients' experiences with coronary disease, mainly women;
- Texts specifically focusing on illnesses like Angina Pectoris or Myocardial Infarction.

Results

In this literature review, various main themes emerge (Figure 1): the importance of cardiovascular diseases (CVD) in terms of morbidity-mortality and social and health consequences; the role of gender in ischemic heart disease (IHD) regarding the presentation of the disease, its evolution over time or how both health professionals and patients themselves should approach it; or the women's behavior towards the first symptoms of coronary disease and the possible justifications for and implications of this attitude.

Author (s)	Main findings
Anguita M (2008), Baena JM (2005), Salvador MJ (2008)	Importance of CVD regarding morbidity-mortality
Sancho D (2010), Heras (2006)	Repercussion of IHD for CVD
Alfonso F (2006), Fernandez AI (2005), Higginson R (2008), Sjöstrom-Strand A (2008)	Women's behavior in view of coronary disease
Lockyer L (2005), Sánchez C (2003), Rohlfs I (2004), Ruiz MT (2004)	Awareness raising about the importance of coronary disease in women

Figure 1 – Main themes found in the texts

Current situation: a silent epidemic

Consensus exists about the vital importance of CVD for morbidity and mortality. Countless studies consider CVD as the main cause of death around the world[4-5]. These authors defend that CVD is the main cause of death in both genders in developed countries, among which the United Kingdom, the USA or Spain, for example, are expressively mentioned. It is estimated that, in 2005, 17.5 million people all over the world died of CVD, which represents approximately 30% of all deaths[5]. The authors of this study consider CVD an "epidemic" without any distinctions in terms of race, age or geography; it is probably the main health problem in developed countries[8-10]. In Europe, the number of dysfunctions due to this reason equals approximately 50%. This proportion is definitely a source of concern, not only because of what it represents, but also because of existing forecasts, showing a hardly tranquilizing future.

In this scenario, mortality due to CVD exceeds figures due to traffic accidents or cancer[5], although the media attention the latter receive hides a reality that cannot be ignored.

Among the CVD, IHD are the most numerous group in terms of deaths. In fact, it is considered that, out of 17.5 million dysfunctions that occur every year in Europe because of CVD, 7.6 million correspond to IHD-related deaths[7].

Forecasts appoint that, in 2050, mortality due to Myocardial Infarction will be about 30% higher in women than in men[11]; nevertheless, cancer is still feared more[4,12].

As for the incidence of IHD in women, various studies support the hypothesis that, every year, this disease kills approximately twice as much women than all kinds of cancer together, and that it constitutes the main cause of disability in women[6].

Approach of IHD from a gender focus: Learning to understand

CVD (including IHD) has some well-known cardiovascular risk factors (CVRF), such as arterial hypertension, hypercholesterolemia, smoking or diabetes mellitus what modifiable factors is concerned; and gender and age as non-modifiable factors[2,6]. Despite this evidence, it has been proven that, among women, knowledge on these risk factors and their relation with IHD is quite poor, which is undoubtedly of vital importance for the final analysis of decision making[5]. It is precisely this lack of knowledge about CVRF that enhances low levels of risk perception in society in general and women in particular[5,13-14]; to the extent that, despite high IHD mortality rates, news on these diseases are not the center of media attention[15]. Health professionals themselves face difficulties for correct AMI (Acute myocardial infarction) diagnosing in women or to identify its symptoms[11]. In addition, another aspect is that, traditionally, women have played an anecdotic role in research on IHD[14]; and women start to be included

in this type of studies as from the 1990's, which is why knowledge in this respect is relatively scarce.

Today, IHD are marked by particular characteristics in function of sex, which conditions differences in frequency, predisposing factors or presentation modes, among others[8,12]. Also, IHD have traditionally been considered a disease connected with the male sex, which has enhanced aspects like health professionals' and the population's low levels of awareness on the true dimensions of the problem[6,12-13].

One of the main problems when addressing this pathology is related with the presentation of its characteristic symptoms; symptoms that women tend to misinterpret and underestimate in most cases. In fact, different recent studies appoint that about 60% of women who experience an AMI did not previously acknowledge the symptoms[14,16]. The consulted literature is rather uniform with regard to the symptoms women tend to experience more frequently during an AMI, despite differences among the distinct studies.

Women usually refer prodromal symptoms like migraine, shoulder problems and even temporary blindness episodes; nevertheless, the most frequent symptom is fatigue, which starts between 2-4 weeks before the AMI and continues after the acute episode[14]. The most common AMI symptom in both sexes, in turn, is chest pain[16], which is located at the center of the chest and irradiates towards the left arm. This pain tends to appear in women in combination with psychosocial stress, and electrocardiograms at rest tend to be normal. In comparison, it is known that men usually define the precordial pain triggered during physical exercise, irradiating towards the jaw and/or left arm and accompanied by vagal symptoms like nausea, vomiting and dyspnea[13]. Back pain frequency is twice as high among women with AMI than among men, and the former are more prone to mentioning symptoms like arm, shoulder, jaw, throat pain or toothache. Moreover, it is appointed that women are more inclined to suffering certain types of AMI symptoms when they are under psychological pressure (stress), with worse prognoses in the female group in case of AMI. In other studies, the presence of atypical symptoms like epigastric or abdominal pain, nausea, vomiting and "feeling ill" are described[10]. IHD symptoms in women seem to be insidious, although previous studies have not defined prodromal symptoms very well[11]. There seems to be a directly proportional relation between physical exercise and IHD. It has also been proposed that women present higher prevalence rates of silent infarctions that men after the age of 55 years, as well as Heart Failure as the first sign of AMI[17].

These are mostly atypical symptoms like diaphoresis, jaw pain, epigastric pain, fatigue, dyspnea or chest pain, among others, symptoms that differ from the classical presentation of the disease in men and, therefore, are more complex to detect over time[10,17]. As a result of this difficulty to recognize symptoms, it takes longer for women to request specialized care. In fact, one of the main problems emerging when treating IHD in women is the delay in the so-called "decision time", that is, the time passed between the onset of symptoms and the demand for medical care[8,10,18]. Some authors appoint that this delay tends to take about 4 hours, ranging between 1.5 and 6 hours[19]. Nevertheless, it is crucial to identify the reasons provoking this delay, as a drastic reduction in post-AMI mortality has been evidenced in case of early intervention, that is, during the first hours[16].

When attempting to explore the reasons underlying this delay described in literature, a range of personal, psychosocial, professional and cultural factors emerges[18] (Figure 2). Aspects like education level, social status or family burden indirectly affect women's attitude towards the first symptoms of an AMI. Different authors have attempted to approach this phenomenon[17-19]; some even propose theoretical constructs that try to respond to women's behavior, such as the "health beliefs model", the "cognitive model", the "self-regulation model" or the "model of reasoned action"[20].

Study	Reasons for delay to request specialized care
Higginson R (2008)	Non-recognition of symptoms, symptom control through self-medication, psychological gender differences
MacInnes J (2006)	Lack of awareness about symptoms, low risk perception, self-treatment
Sjöström-Strand A (2008)	Non-recognition of symptoms
Rohlfs I (2004)	Cultural factors (pain and disease risk perception), social factors (situation women are in when the symptoms appear), psychological factors (depression or emotional solitude), comorbidity.
Hart (2005)	Lack of knowledge on the risk factors and presentation of the disease.

Figure 2 – Reasons and factors related with the delay

One of the most frequent underlying motives for the delay in medical care requests is women's lack of

knowledge on CVRF and the disease itself. More than 50% of the sample in a study on the theme was unable to correctly identify the risk factors for CVD[7], which supposes scarce knowledge and little awareness on the causes and CVRF. In the same text, a direct relation is appointed between the level of knowledge on CVD and certain socio-demographic risk factors on the one hand and the acquisition of health promotion behaviors on the other. In another study[16], the "self-regulation model" is proposed, according to which the representation and knowledge of a previous experience are used to interpret new experiences and modify behaviors. Some definitely alarming figures appear, like for example that only 21.5% of the interviewees knew when to go to the emergency care service in case of precordial pain[21]. Women's little knowledge on their disease is a fact that has been contrasted in the consulted literature, but one question remains: Where does the information come from? Communication means, scientific reports and the family itself are directly appointed as patients' information sources on their disease[11]. Another piece of information is no less concerning: the information patients obtain about CVD does not usually come from the Nursing group.[22]

In the same line, some authors defend that health education should start in school and be a source of permanent reflection[22]. In fact, it has been proven that patients who receive health education about IHD through conversations with nurses, accompanied by written information in practical guides, mainly to gain and maintain cardiohealthy habits[22]. Different studies have signaled the need for greater awareness on IHD, among women as well as health professionals themselves and society in general, as a means to reduce morbidity and mortality[23]. All of this greater awareness should include better early recognition of the disease, with a view to taking early action and avoiding unnecessary delays in care requests, which in turn affects morbidity and mortality[7]. Nursing plays a fundamental role here, as it occupies a privileged position to raise women's awareness and help them to develop effective CVRF control strategies[13].

But differences in IHD regarding women not only regard the way the disease presents itself or the delay to request specialized care, but also extend to aspects like the treatment received. In this sense, it has been proven that women are in situation of total inequality when compared to men[1], as the treatment women receive tends to be less aggressive, although figures show higher mortality and severity rates in comparison with men, mainly in advanced phases of life[24]. Different studies have confirmed that women who turn to emergency care due to an AMI have to wait longer to receive care and that less diagnostic tests are applied[19-20]. When women decide to seek specialized help, they indicate difficulties in the diagnostic process, and on many occasions are not taken seriously[24-25]. They tend to be treated with anxiolytics or antidepressants, as care professionals mistakenly identify the symptoms they refer with anxious-depressive disorders[14].

Discussion

In this literature review, certain limitations need to be highlighted in its proposal and the obtained results. One of them is undoubtedly the selection bias, as mainly qualitative texts were collected, which mostly address the study theme from a gender perspective, which is exactly what the researchers intended to explore. Thus, the texts mostly reflect what women experience, feel and perceive with regard to the IHD, which can induce towards the selected bias. On the other hand, this limitation affected the strategy followed to locate the articles as, when the texts were selected that were going to be part of the review, the criteria were extremely clear; those studies were interested that somehow explored the IHD from a female perspective.

On the other hand, it is certain that more articles could have been selected, but a characteristic principle of qualitative research was applied: that of information saturation. In this respect, relatively scarce scientific production was found about women with IHD, and from mostly Anglo-Saxon origins. This can be due to a factor that has appeared throughout the text: women's little representativeness in IHD research until a short time ago.

Another factor that needs to be taken into account with regard to limitations is that, recently, a predominance of phenomenological or qualitative studies has been observed; perhaps in the attempt to answer certain concerns that emerged from recent evidence on the disease. It is undeniable that women have assumed a perhaps involuntary protagonist role in IHD, which has generated an important turn in the classical focus on the disease, which in turn will provoke substantial changes in the future approach of this disease.

This review shows that a deficit exists in women's knowledge level on IHD when they suffer from the disease, in line with other authors' contributions. This is probably a core element when exploring coronary disease from a gender perspective, as this deficit

takes the form of actions marked by a delay to request specialized medical care and undervaluation of IHD symptoms, so that, on most occasions, the disease is not recognized early. All of this entails a worse prognosis and a less favorable evolution of IHD in general.

Conclusions

The findings in this review are extremely useful, as they provide us with an extremely valuable perspective on the current situation of IHD in women. It should lead to the proposal of short and medium-term objectives that broaden the course ahead. In this respect, it is fundamental to shorten the decision time, so as to be able to improve the outcomes and survival of women with AMI. As appointed, the prognosis increases exponentially with the reduction in the decision time. One practical way of reaching this goal would be to raise women's awareness on the importance of IHD, and that is where Nursing finds an activity area with extensive possibilities. Thus, programs need to be put in practice that, from a Primary Care perspective, inform women about CVRF, disease peculiarities, myths and existing beliefs in public opinion, the possible symptoms of IHD and, maybe the most crucial aspects, how to respond to these symptoms. Primary prevention and health promotion are strategies health policies in this respect should be based on.

Today, we have reached an inflection point regarding coronary disease, as gender has turned into a factor that needs to be taken into account in the approach of this disease. This has entailed a new perspective that can help us understand this type of illnesses better and, therefore, to plan preventive strategies aimed at decreasing the associated morbidity and mortality. An increasing number of studies echo this reality and intend to approach the way patients experience and feel their disease, as a means to gain effectiveness in the fight against cardiovascular illnesses.

In this context of progressive awareness on the true situation of CVD around the world, the cooperation of communication media is fundamental, which should play a suggestive and progressive leadership role. IHD should be known and disseminated. In this respect, written and audiovisual media represent an effective weapon to make this information women should have reach its target. In this sense, Nursing professionals represent a necessary vehicle to educate and inform the population about cardiovascular risk factors, the consequences CVD entail and prevention and management-related aspects.

Thus, further qualitative research is needed, going further in the approach of women's experiences with the disease, as a means to elaborate effective personal, social, family and cultural approach strategies. It is exactly this multidimensionality of the illness the intended focus on IHD should be based on, in which women gain awareness of their disease as a preliminary step for its further control and self-care.

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